



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,659	01/31/2002	Mark Philip D'Evelyn	RD-26623	1467
6147	7590	04/13/2005	EXAMINER	
GENERAL ELECTRIC COMPANY GLOBAL RESEARCH PATENT DOCKET RM. BLDG. K1-4A59 NISKAYUNA, NY 12309			ANDERSON, MATTHEW A	
			ART UNIT	PAPER NUMBER
			1722	

DATE MAILED: 04/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/683,659	D'EVELYN ET AL.	
	Examiner	Art Unit	
	Matthew A. Anderson	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 1-4,6,7,9-17,19,20,24,26-31,33-41,43-46,48,49,51-59,61,62,66,68-73,75-80 and 95-128.

Continuation of Disposition of Claims: Claims rejected are 1-4,6,7,9-17,19,20,24,26-31,33-41,43-46,48,49,51-59,61,62,66,68-73,75-80 and 95-128.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-4, 6-7, 9-17, 19-20, 24, 26-31, 33-41, 43-46, 48-49, 51-59, 61-62, 66, 68-73, 75-80, 95-128 are rejected under 35 U.S.C. 103(a) as being anticipated by Byrappa et al., Handbook of Hydrothermal Technology, Chapter 3: Apparatus, pp. 82-160, 2001.

Byrappa et al. discloses apparatus used at extreme pressures and temperatures. (see page 82). Page 83 discloses simple autoclaves from the 1970's. Selection of

Art Unit: 1765

materials includes steel, iron, nickel, cobalt-based, super-alloys, titanium and titanium's alloys. These materials exhibit good corrosion resistance at the use pressure and temperature to the given solvent or hydrothermal fluid. Fig. 3.3 shows the general shape of the vessel to be a hollow cylinder with a closure at one end. Liners of the vessel include (see Table 3.5) Ti, iron alloys, Ag, Pt, Cu, Ni, Au. Pt is inherently inert. Fig. 3.19 shows a baffle in such an apparatus. Fig. 3.21 shows threads on the closure cap. On page 106, a silver or copper seal gasket is disclosed. The danger of hydrogen embrittlement is disclosed on page 89. Hydrogen embrittlement is caused by hydrogen forming metal hydrides and thus reducing the strength of the apparatus. Table 1 shows apparatus capable of operating with pressure of 6 bar up to 500 kbar. A plug is shown in Fig. 3.11. with a tube extending there-through. The examiner notes that the intended use of the vessel (i.e. a use where the chamber is substantially free from air) is not germane to the issue of the patentability of the apparatus itself.

Byrappa does not disclose: (1) the barrier between the inert liner coating and the wall of the capsule; (2) the exact thickness of the coatings; (3) the exact material properties such as permeability; (4) self- pressurizing character of the capsule; (5) exact baffle material.

In respect to claims 1, 6, 10, 20, 31, 45-46, 107, 122, it would have been obvious to one of ordinary skill in the art at the time of the present invention to form a capsule (made of the claimed materials) having a closed end, walls, a sealed end, one of at least one coating and an inert liner on the inside surface and to make the liner or coating of a different material than the capsule itself because Byrappa et al. discloses

Art Unit: 1765

capsules with a liner layer on all inner surfaces and several choices for both the capsule material and the liner material.

Additionally, In respect to claims 1, 6, 10, 31, 48, 52, 62 it would have been obvious to one of ordinary skill in the art at the time of the present invention to duplicate the liner inside the capsule and make it of a further different material because such double layered liner layers would have been expected to give additional protection to the inside surface from corrosion at high temperature and pressures.

In respect to the claims, especially claims 95-96, 105-106, the examiner notes that Byrappa et al. discloses the same materials for the capsule and thus one of ordinary skill in the art would conclude that those materials would have similar properties for weldability and deformability.

In respect to claims 7, 9, 19, 24, 49, 51, 61, 66 it would have been obvious to one of ordinary skill in the art at the time of the present invention to optimize the thickness of the lining (i.e. coating) and barrier layer inside the vessel and the thickness of the wall itself because the coatings were for corrosion protection and Byrappa discloses a coating with some uncertain thickness. The optimization of the thickness of the parts would have been achieved with only routine experimentation.

In respect to claims 27, 28, 29, 69-70, 71, 97, 115 it would have been obvious to one of ordinary skill in the art at the time of the present invention to form a capsule with a coated baffle inside that is made from the same corrosion resisting materials used for the capsule and inside coating layers because Byrappa discloses such baffles and materials.

In respect to claim 26, 68, it would have been obvious to one of ordinary skill in the art at the time of the present invention to optimize the baffle opening because this would have been known to be useful in pressure apparatus.

In respect to claims 30, 40-41, 43-44, 72-73, 101-102, 111-112, 119-120, 126-127 it would have been obvious to one of ordinary skill in the art at the time of the present invention to form a seal for the capsule and capsule lid (having a sealed fill tube) with threads because Byrappa suggests such a seal and lid (see fig. 3.6).

In respect to claim 33,34, 75-76, it would have been obvious to one of ordinary skill in the art at the time of the present invention to include an outer seal which surrounds the capsule in entirety because the duplicated seal would have provided a redundant safety measure (i.e. two seals vs. one before a leak).

In respect to claim 35, 103, 113 it would have been obvious to one of ordinary skill in the art at the time of the present invention to form a capsule with no hydrogen permeability because this would increase the safety by reducing the danger of hydrogen embrittlement.

In respect to claim 36-39, 77-80, 104, 114, 121, 128, it would have been obvious to one of ordinary skill in the art at the time of the present invention that the vessel be self pressurizing since the relation between P and T are commonly known.

Art Unit: 1765

4. Claims 11-17, 53-59, 98-100, 108-110, 116-118, 123-125 are rejected under 35 U.S.C. 103(a) as being unpatentable over Byrappa et al. as applied to the claims above, and further in view of Purdy US 5,902,396.

Byrappa et al. is described above.

Byrappa et al. does not disclose explicitly a free space between an inner capsule and an outer capsule.

Purdy discloses a method of growing a crystal with an inner vessel (see # 12 in Fig. 1) and an outer vessel (20). A free space is shown in Fig.1 between the vessels. In col. 5 line 10-15 a counter pressure fluid (water) is disclosed as provided in the space between the vessels to counter the possibility of explosion. The inner vessel can be a quartz (i.e. a silicon oxide based glass).

It would have been obvious to one of ordinary skill in the art at the time of the present invention to combine the disclosures of Byrappa et al. and Purdy because Byrappa et al. discloses that safety is extremely important for pressure vessels and Purdy discloses a way of increasing safety.

In respect to claims 11-14, 53-56, 98-100, 108-110, 116-118, 123-125 , it would have been obvious to one of ordinary skill in the art at the time of the present invention to place the inner vessel (i.e. capsule) inside a outer vessel with a counter pressure fluid (i.e. a medium) (e.g. water) which provides an overpressure because such is suggested by Purdy et al.

In respect to claim 15-16, 57-58, it would have been obvious to one of ordinary skill in the art at the time of the present invention to use a quartz inner vessel because Purdy directly suggests such.

In respect to claim 17, 59 it would have been obvious to one of ordinary skill in the art at the time of the present invention to optimize the thickness of the quartz inner vessel since Purdy suggests such a vessel which has a thickness.

Allowable Subject Matter

5. Applicant is advised that the notice of allowability of claims 8-10, 21-23, 28-29, 33, 42-43, 50-52, 63-65, 70-71, 75 in the action mailed 12/09/2004 is vacated.

Response to Arguments

5. Applicant's arguments with respect to the claims as amended on 12/23/2004 have been considered but are moot in view of the new ground(s) of rejection presented above.

Conclusion

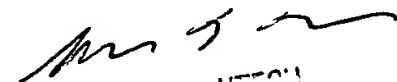
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Anderson whose telephone number is (571) 272-1459. The examiner can normally be reached on M-F, 8:30-5.

Art Unit: 1765

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on (571) 272-1137. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAA
April 11, 2005


BENJAMIN UTECH
SUPERVISOR
TECHNICAL CENTER 1700